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FEDERAL COMMUNICATIONS COMMISSION
Washington DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
Amendment of Part 90 of the)
Commission's Rules to Adopt)
Regulations for Automatic)
Vehicle Monitoring Systems)

PR Docket No. 93-61
RM-8013

COMMENTS OF SYMBOL TECHNOLOGIES, INC.
IN RESPONSE TO THE
PUBLIC NOTICE OF FEBRUARY 9, 1994

Symbol Technologies, Inc. ("Symbol"), a major manufacturer of Part 15 spread spectrum data communications equipment, hereby submits these Comments in response to the Commission's Public Notice of February 9, 1994, as supplemented by the Order of February 25, 1994.^{1/}

The original Notice of Proposed Rule Making in this docket proposed a new Location and Monitoring Service ("LMS") in the 902-928 MHz band.^{2/} Many of the comments filed in response to that Notice, including Symbol's, addressed the threats of mutual interference between LMS and the near-ubiquitous Part 15 systems

^{1/} Additional Comment Sought on Ex Parte Presentations, PR Docket No. 93-61, Public Notice DA 94-129 (released Feb. 9, 1994); Order, PR Docket No. 93-61, DA-94-178 (released Feb. 25, 1994). Symbol is the leading manufacturer of portable bar code driven data transaction systems, with 2.5 million scanners and hand-held computers installed. Symbol designs, manufactures, and markets bar code laser scanners, portable computers, and spread spectrum data communications networks that are used as strategic building blocks in technology systems for retail, warehousing, distribution, manufacturing, package and parcel delivery, health care, and other industries.

^{2/} Automatic Vehicle Monitoring Systems, 8 FCC Rcd 2502 (1993) ("Notice").

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already using the same band. A large number of ex parte communications in this heavily-lobbied proceeding have raised the same issue, including the Pacific Teletrac filing cited in the Public Notice.^{3/}

**TELETRAC'S TECHNICAL PROPOSAL WILL NOT SIGNIFICANTLY
IMPROVE THE ENVIRONMENT FOR PART 15 SPREAD SPECTRUM
OPERATIONS.**

The stated aim of Teletrac's technical proposal is to facilitate spectrum sharing among LMS providers,^{4/} but Teletrac also asserts that its proposal "improves the environment for Part 15 devices."^{5/} Teletrac does not explain that assertion, nor does it make any other mention of Part 15 operations. Presumably, however, the assertion follows from Teletrac's proposal to "decrease[] the spectrum allocation intended for wide area multilateration systems from 16 MHz to 10 MHz."^{6/}

A decrease in spectrum allocated to wideband LMS operations will not significantly "improve[] the environment" for Part 15 use. While it may improve conditions for Teletrac's own operations, by reducing the bandwidth over which LMS is exposed to interference from Part 15 equipment -- the same reason

^{3/} Letter from John Lister, President and co-CEO, PacTel Teletrac, to Ralph A. Haller, Chief, Private Radio Bureau, FCC (Jan. 26, 1994) ("Teletrac Letter"). Other filings cited in the Public Notice were submitted by MobileVision and Southwestern Bell Mobile Systems, Inc.

^{4/} Teletrac Letter at 1.

^{5/} Id.

^{6/} Id.

duelists stand sideways to their opponents -- the proposal would do little for large-scale, commercial Part 15 users of spread spectrum technology. The record in this proceeding has made abundantly clear that Part 15 spread spectrum applications cannot coexist with wideband LMS, whether at 16 MHz or 10 MHz.

Along with dozens of other commenters, Symbol has previously documented the size, sophistication, and economic importance of spread spectrum operations at 902-928 MHz, so that only a brief review is needed here. Since the Commission authorized spread spectrum under Part 15,^{1/} users have invested over \$400 million in Part 15 radio products at 902-928 MHz, with a current annual growth rate of between 30 and 50 percent! Ironically, large users have undertaken the added expense of purchasing and installing spread spectrum equipment, rather than conventional narrowband devices, in large part to minimize interference between their own applications and the numerous narrowband users in the band, including the current Automatic Vehicle Monitoring (AVM) systems. That investment is now threatened by the proposed expansion of AVM to include high-power wideband operations.

But even the large investment in 902-928 MHz radio equipment -- more than half a billion dollars by the middle of this year -- is just the tip of the iceberg. Commercial spread spectrum users have invested 10 times that amount in computer hardware and software and training to support their radio communications.

^{1/} Spread Spectrum Systems, 101 F.C.C.2d 419 (1985).

Spread spectrum equipment is the fastest growing segment of the active and highly visible retail automation market. And more than 50% of all new installations of wireless data collection systems in all industrial sectors use spread spectrum operating at 902-928 MHz. The cost of consumer spread spectrum equipment -- particularly cordless telephones -- is now competitive with narrow-band products. Some industry observers expect the high performance of spread spectrum units to vastly increase the number of cordless telephones in use.

Commercial spread spectrum equipment automates tasks in real time, provides dramatic speed reductions, and increases accuracy. Typical applications include retail pricing, inventory control, and incoming receiving control; warehousing and distribution; tracking of raw materials, work in progress, and finished goods in manufacturing, as well as inventory control, production tracking, and quality assurance reporting; and tracking of shipments by package and parcel delivery providers, passenger airlines, the US Postal Service, and freight trucking. Many of these applications are invisible to consumers, but their impact nonetheless shows up clearly at the checkout stand in the form of lower prices, and also in the United States' competitive edge in global markets. The technology holds down production and distribution costs, reduces lost shipments and misplaced items, facilitates "just in time" inventory control for manufacturing and retail, and permits fast and flexible competitive responses to changing conditions.

Other applications will soon change how American consumers shop. Fixed checkout lanes will become a relic of the past. Sales personnel in some stores already carry hand-held portable point-of-sale devices that "ring up" sales, read credit and debit cards and process approvals, confirm and update inventory, manage back-orders and special orders, and generally handle all the non-cash functions of a fixed checkout position through spread spectrum communications. Other stores use portable cash registers that are quickly and easily rolled to where they are needed and communicate with the pricing computer over a spread spectrum link. Shoppers in some European supermarkets are issued a handheld device that scans items purchased and automatically charges them to a credit card or debit card; after making selections, the shopper walks out of the store with no checkout at all. In those stores the valuable square footage now occupied by checkout lanes and waiting lines of shoppers ultimately can be converted to revenue-producing sales areas.

Spread spectrum technology is also helping to improve performance and hold down costs in the health care industry. The inventory problems of a typical hospital rival those of a substantial retail outlet, but with far more serious consequences if an item is not at hand when needed. Some hospitals bar-code not only their inventory, but also each patient's ID bracelet, and then create accurate bills at very low cost simply by using a hand-held device to scan each item as it is used, as well as the patient's bracelet. A hospital-wide spread spectrum system

relays both codes to a central computer where they are interpreted and paired for later billing. Some hospitals also bar-code each dose of medication and require the nurse to scan both the medication and the patient's bracelet before administering the dose. Thanks to spread spectrum communications, the nurse's scanner immediately sounds an alarm if the medication and dosage are not right for that patient at that time, or if the computer detects a possible drug interaction problem. While the current debate on health care has helped many Americans understand that administrative expenses are a significant factor in escalating health care costs, Part 15 spread spectrum technology offers a fully practical way of keeping those expenses down while maintaining or improving the quality of patient care.

Spread spectrum equipment at 902-928 MHz is engineered to coexist not only with other Part 15 devices, but also with licensed amateur operators, Government radiolocation, ISM equipment, and existing AVM applications. The reliable operation of spread spectrum communications, even in this crowded and chaotic band, spares both users and the Commission the paperwork burdens familiar to the licensed services. The Part 15 regulatory environment also enables manufacturers and service providers to respond quickly to customers' changing needs, yet at the same time protects licensed communications from harmful interference. This highly successful arrangement leaves development and implementation decisions where they belong, in

the hands of users and the marketplace, to the benefit of all concerned. But the record in this docket has established that at least some of the proposed LMS technology is technically fragile and vulnerable to interference, and so threatens to disrupt highly useful and economically valuable applications of the spectrum. Nothing in Teletrac's recent filings suggests any fundamental change to its technology that would help to address this problem.^{8/}

Part 15 spread spectrum applications are neither "experimental" or "developmental": They are in daily use by thousands of companies in every industrial sector -- not just in a few "pilot" locations, but in every American community big enough to have a WalMart or a K-Mart or a McDonald's. Virtually every American consumer pays lower prices because of this technology, through its use both in retail stores and back upstream through the distribution and manufacturing chains. Adoption of Teletrac's proposal -- whether the original version or the modification filed on January 26 -- would destroy these hard-won benefits.^{9/}

^{8/} Nor has Teletrac shown any inclination to relax its steadfast refusal to disclose enough of its technology to permit a quantitative assessment of the mutual risk of interference between Teletrac's operations and Part 15 applications.

^{9/} Moreover, Symbol agrees with the Part 15 Coalition (in draft comments) that Teletrac's proposal (Letter at 2) to license LMS in the BTAs to be used for licensing PCS would put LMS in direct competition with PCS. Teletrac has made no effort to hide the fact that it plans to offer data and voice messaging under LMS licenses, Notice, 8 FCC Rcd at 2503 n.19; Teletrac Letter at 3; and the Part 15 Coalition reports that Teletrac already holds

Finally, it is time to retire the counterargument that Part 15 interests need not be considered in this proceeding because Part 15 is secondary to licensed services. No one can seriously doubt that Part 15 operations today are in the public interest. That being so, the Commission not only can, but must, consider the impact on Part 15 in amending its rules on AVM.^{10/} Its failure to do so would be grounds for reversal under the Administrative Procedure Act.^{11/} The secondary status of Part 15 would come into play, if at all, only after conclusion of the rule making, only if the Commission ultimately chose to overlook the effects of LMS on Part 15, and only if the Commission were able to explain that decision satisfactorily in its Report and Order.^{12/} During the decision-making process, however, the Commission is legally required to give the public interest in Part 15 full consideration.

licenses in the top 50 U.S. markets, whose BTAs have an aggregate population of over 147 million. Yet LMS licensees such as Teletrac would be spared the auction fees required of PCS providers, and so could operate at lower costs than their PCS competitors. The outcome is very likely to be predatory pricing by the LMS providers with anticompetitive effects in the market for PCS services.

^{10/} See 47 U.S.C. §§ 303(c), (d).

^{11/} 5 U.S.C. § 706(2).

^{12/} Public Media Center v. FCC, 587 F.2d 1322, 1331-32 (D.C. Cir. 1978) (remanding where agency failed to adequately articulate its reasons for decision).

CONCLUSION

As shown above, spread spectrum technology is in widespread use today and benefits all Americans by reducing costs and improving performance in every sector of the economy. LMS threatens the integrity of these applications. Teletrac's recent technical proposal does not significantly reduce that threat.

Respectfully submitted,

Symbol Technologies, Inc.
1101 S. Winchester Blvd.
Suite B-110
San Jose, CA 95128
(408) 446-2210



Peter Tannenwald



Mitchell Lazarus

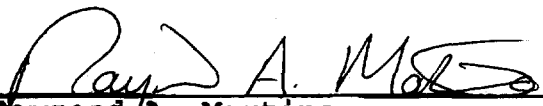
Arent, Fox, Kintner,
Plotkin & Kahn
1050 Connecticut Avenue, N.W.
Washington, DC 20036-5339
(202) 857-6024/6466

March 15, 1994

Counsel for
Symbol Technologies, Inc.

VERIFICATION

I have read the foregoing Comments of Symbol Technologies, Inc. in PR Docket No. 93-61. I declare under penalty of perjury that the facts stated therein are true and correct to the best of my knowledge and belief. Executed on February 23, 1994.



Raymond A. Martino
Director RF Engineering
Symbol Technologies, Inc.